

Amendments

In the Claims:

Please cancel claims 43-44, 51-52 and 54-56, add new claim 57, and amend claims 1, 45, 49 and 53 of previously pending claims 1 and 42-56, as shown below.

1. (Currently Amended) A method for etching a pattern on a workpiece, comprising:

selecting a workpiece with a hard mask deposited over a layer to be etched, which hard mask is comprised of a reactive metal, the hard mask further defining a pattern exposing portions of the layer to be etched including at least one portion having a critical dimension, said hard mask being substantially unoxidized; and

processing the workpiece in the reactor by exposing the workpiece to hard mask to a stream of oxidizing gas mixed with an etchant in order to expose the hard mask to the oxidizing gas and form an oxide skin on the exposed surface of the hard mask, and in order to etch; ~~and processing the workpiece in a reactor by exposing the entire hard mask to an etch; whereby the layer is etched corresponding to the pattern of the hard mask, and the whereby growth of the layer during the etch is minimized in the portion of the layer corresponding to the critical dimension.~~

42. (Previously Presented) The method of claim 1, wherein:

said selecting step includes selecting a workpiece having a hard mask, which hard mask comprises of one of titanium, aluminum, and tantalum.

43-44. (Cancelled)

45. (Currently Amended) The method of claim 1, wherein:

~~exposing the hard mask to an oxidizing stream includes using a~~ the oxidizing gas comprises
~~stream comprising of one of oxygen, nitrogen, fluorine, boron, and carbon gas, and any combination~~
of oxygen, nitrogen, fluorine, boron, and carbon gas, in the reactor prior to or during said etch step.

46. (Previously Presented) The method of claim 1, wherein :

said selecting step includes selecting a workpiece with a lithographic layer covering the hard mask.

47. (Previously Presented) The method of claim 1, wherein:

said selecting step includes selecting a substrate having a hard mask which is readily oxidizable.

48. (Previously Presented) The method of claim 1, wherein:

said selecting step includes selecting a substrate with a hard mask, which hard mask is comprised of a metal with a low sputtering yield.

49. (Currently Amended) The method of claim 1, wherein:

oxidizing ~~exposing the hard mask to a stream of oxidizing gas~~ oxidizes the surface of the hard mask, thereby slowing down an etch rate of the hard mask.

50. (Previously Presented) The method of claim 1, wherein:

said selecting step includes selecting a hard mask (1) on which has been or (2) on which can be developed at least one of an oxide, nitride, fluoride, boride and carbide.

51-52. (Cancelled)

53. (Currently Amended) A method for etching a pattern on a workpiece, comprising:

processing a workpiece using etch process gases, the workpiece having a hard mask deposited over a layer to be etched, which hard mask is comprised of a reactive metal and defines a pattern wherein a portion of the layer is exposed, and wherein the hard mask remains substantially unexposed to a gas for lowering at least one of its sputtering yield or erosion rate; and

allowing the patterned hard mask to react with the etch process gases mixed together in order to lower at least one of the sputtering yield and erosion rate of the hard mask and to etch, whereby the layer is ~~etched~~ corresponding to the pattern of the hard mask, ~~and the hard mask holds the pattern of the hard mask being etched into the layer.~~

54-56. (Cancelled)

57. (New) The method of claim 53, wherein the etch process gases comprise a gas for lowering the erosion rate of the hard mask comprising one of oxygen, nitrogen, fluorine, boron, and carbon gas.